SEQUENCE LISTING

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<110>  Wisnewski, Nancy
      Brandt, Kevin S.

<120>  CANINE COX-1 AND COX-2 NUCLEIC ACID MOLECULES, PROTEINS AND USES THE
REOF

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<140>  not yet assigned
<141>  2001-07-30

<150>  60/224,486
<151>  2000-08-11

<160>  25

<170>  PatentIn version 3.1

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Gly Tyr Lys Ser Trp Glu Ala Phe Ser Asn Leu Ser Tyr Tyr Thr Arg
            20                  25                  30

gct ctt ccc cct gta cct gat gac tgt cca aca ccc atg ggt gtg aaa       145
Ala Leu Pro Pro Val Pro Asp Asp Cys Pro Thr Pro Met Gly Val Lys
        35                  40                  45

ggc aag aaa gag ctt cct gat tca aaa gag att gtg gaa aag ttt ctt       193
Gly Lys Lys Glu Leu Pro Asp Ser Lys Glu Ile Val Glu Lys Phe Leu
    50                  55                  60

ctg cga aga aag ttc att cct gat ccc caa ggc acc aat atg atg ttt       241
Leu Arg Arg Lys Phe Ile Pro Asp Pro Gln Gly Thr Asn Met Met Phe
65                  70                  75                  80

gca ttc ttt gcc cag cac ttt acc cat caa ttt ttc aag aca gat cat       289
Ala Phe Phe Ala Gln His Phe Thr His Gln Phe Phe Lys Thr Asp His
                85                  90                  95

aag cga gga cca gct ttc acc aaa gga ttg ggc cat ggg gtg gac tta       337
Lys Arg Gly Pro Ala Phe Thr Lys Gly Leu Gly His Gly Val Asp Leu
            100                 105                 110
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aat cat gtt tat ggg gaa act ttg gat aga caa cat aaa ctg cgc ctt       385
Asn His Val Tyr Gly Glu Thr Leu Asp Arg Gln His Lys Leu Arg Leu
        115                 120                 125

ttc aag gat gga aaa atg aaa tat cag gta att gat gga gag gtg tat       433
Phe Lys Asp Gly Lys Met Lys Tyr Gln Val Ile Asp Gly Glu Val Tyr
    130                 135                 140

cct cct acc gtc aaa gat act cag gtc gag atg atc tac cca cct cat       481
Pro Pro Thr Val Lys Asp Thr Gln Val Glu Met Ile Tyr Pro Pro His
145                 150                 155                 160

gtt cct gaa cac ctg cag ttt gct gtg ggc caa gag gtc ttt ggt cct       529
Val Pro Glu His Leu Gln Phe Ala Val Gly Gln Glu Val Phe Gly Pro
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Ala Leu Pro Pro Val Pro Asp Asp Cys Pro Thr Pro Met Gly Val Lys
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Gly Lys Lys Glu Leu Pro Asp Ser Lys Glu Ile Val Glu Lys Phe Leu
    50                  55                  60


Leu Arg Arg Lys Phe Ile Pro Asp Pro Gln Gly Thr Asn Met Met Phe
65                  70                  75                  80


Ala Phe Phe Ala Gln His Phe Thr His Gln Phe Phe Lys Thr Asp His
                85                  90                  95


Lys Arg Gly Pro Ala Phe Thr Lys Gly Leu Gly His Gly Val Asp Leu
            100                 105                 110


Asn His Val Tyr Gly Glu Thr Leu Asp Arg Gln His Lys Leu Arg Leu
        115                 120                 125
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Phe Lys Asp Gly Lys Met Lys Tyr Gln Val Ile Asp Gly Glu Val Tyr
    130                 135                 140


Pro Pro Thr Val Lys Asp Thr Gln Val Glu Met Ile Tyr Pro Pro His
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Val Pro Glu His Leu Gln Phe Ala Val Gly Gln Glu Val Phe Gly Pro
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Gly Ala Leu Val
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catcaattac ctgatatttc atttttccat ccttgaaaag gcgcagttta tgttgtctat     180

ccaaagtttc cccataaaca tgatttaagt ccaccccatg gcccaatcct ttggtgaaag     240

ctggtcctcg cttatgatct gtcttgaaaa attgatgggt aaagtgctgg gcaaagaatg     300

caaacatcat attggtgcct tggggatcag gaatgaactt tcttcgcaga agaaactttt     360

ccacaatctc ttttgaatca ggaagctctt tcttgccttt cacacccatg ggtgttggac     420

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Ala Arg Ala Leu Val Leu Cys Ala Ala Leu Ala Val Val Arg Ala Ala
        5                   10                  15

aat cct tgc tgt tcc cac cca tgt caa aac caa ggt att tgt atg agc         154
Asn Pro Cys Cys Ser His Pro Cys Gln Asn Gln Gly Ile Cys Met Ser
    20                  25                  30

aca gga ttt gac cag tat aag tgt gac tgt acc cga aca gga ttc tac         202
Thr Gly Phe Asp Gln Tyr Lys Cys Asp Cys Thr Arg Thr Gly Phe Tyr
35                  40                  45                  50

ggc gaa aac tgc tca aca ccg gaa ttt ctg aca aga ata aaa tta tac         250
Gly Glu Asn Cys Ser Thr Pro Glu Phe Leu Thr Arg Ile Lys Leu Tyr
                55                  60                  65

ctg aaa ccc act cca aat aca gta cac tac ata ctt acc cac ttc aag         298
Leu Lys Pro Thr Pro Asn Thr Val His Tyr Ile Leu Thr His Phe Lys
            70                  75                  80

gga gtc tgg aac att gtc aat aac atc ccc ttc ctg cga aat aca att         346
Gly Val Trp Asn Ile Val Asn Asn Ile Pro Phe Leu Arg Asn Thr Ile
        85                  90                  95

atg aaa tat gtg ttg aca tcc cgg tca cat ttg att gag agt cca cca         394
Met Lys Tyr Val Leu Thr Ser Arg Ser His Leu Ile Glu Ser Pro Pro
    100                 105                 110

act tat aat gtg aac tac ggc tat aaa agc tgg gaa gcc ttt tct aac         442
Thr Tyr Asn Val Asn Tyr Gly Tyr Lys Ser Trp Glu Ala Phe Ser Asn
115                 120                 125                 130

ctc tcc tat tat acc aga gct ctt ccc cct gta cct gat gac tgt cca         490
Leu Ser Tyr Tyr Thr Arg Ala Leu Pro Pro Val Pro Asp Asp Cys Pro
                135                 140                 145

aca ccc atg ggt gtg aaa ggc aag aaa gag ctt cct gat tca aaa gag         538
Thr Pro Met Gly Val Lys Gly Lys Lys Glu Leu Pro Asp Ser Lys Glu
            150                 155                 160

att gtg gaa aag ttt ctt ctg cga aga aag ttc att cct gat ccc caa         586
Ile Val Glu Lys Phe Leu Leu Arg Arg Lys Phe Ile Pro Asp Pro Gln
        165                 170                 175

ggc acc aat atg atg ttt gca ttc ttt gcc cag cac ttt acc cat caa         634
Gly Thr Asn Met Met Phe Ala Phe Phe Ala Gln His Phe Thr His Gln
    180                 185                 190

ttt ttc aag aca gat cat aag cga gga cca gct ttc acc aaa gga ttg         682
Phe Phe Lys Thr Asp His Lys Arg Gly Pro Ala Phe Thr Lys Gly Leu
195                 200                 205                 210

ggc cat ggg gtg gac tta aat cat gtt tat ggg gaa act ttg gat aga         730
Gly His Gly Val Asp Leu Asn His Val Tyr Gly Glu Thr Leu Asp Arg
                215                 220                 225

caa cat aaa ctg cgc ctt ttc aag gat gga aaa atg aaa tat cag gta         778
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Gln His Lys Leu Arg Leu Phe Lys Asp Gly Lys Met Lys Tyr Gln Val
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att gat gga gag gtg tat cct cct acc gtc aaa gat act cag gtc gag         826
Ile Asp Gly Glu Val Tyr Pro Pro Thr Val Lys Asp Thr Gln Val Glu
        245                 250                 255

atg atc tac cca cct cat gtt cct gaa cac ctg cag ttt gct gtg ggc         874
Met Ile Tyr Pro Pro His Val Pro Glu His Leu Gln Phe Ala Val Gly
    260                 265                 270

cag gag gtc ttt ggt ctg gtg cct ggt ctg atg atg tat gcc acc att         922
Gln Glu Val Phe Gly Leu Val Pro Gly Leu Met Met Tyr Ala Thr Ile
275                 280                 285                 290

tgg ctg cgg gag cat aac aga gtg tgt gat gtg ctt aaa cag gag cac         970
Trp Leu Arg Glu His Asn Arg Val Cys Asp Val Leu Lys Gln Glu His
                295                 300                 305

cca gaa tgg gat gat gag cgg tta ttc cag acg agc agg cta ata ctt        1018
Pro Glu Trp Asp Asp Glu Arg Leu Phe Gln Thr Ser Arg Leu Ile Leu
            310                 315                 320

ata gga gaa acc att aag att gtg att gaa gac tat gta caa cac ttg        1066
Ile Gly Glu Thr Ile Lys Ile Val Ile Glu Asp Tyr Val Gln His Leu
        325                 330                 335

agt ggc tat cac ttc aag ctg aag ttt gac cca gag ctg ctt ttc aac        1114
Ser Gly Tyr His Phe Lys Leu Lys Phe Asp Pro Glu Leu Leu Phe Asn
    340                 345                 350

caa caa ttc cag tac caa aac cgc att gct gct gag ttt aac aca ctc        1162
Gln Gln Phe Gln Tyr Gln Asn Arg Ile Ala Ala Glu Phe Asn Thr Leu
355                 360                 365                 370

tac cac tgg cat ccc ctc ctg cct gac acc ttg caa ata gat gac cag        1210
Tyr His Trp His Pro Leu Leu Pro Asp Thr Leu Gln Ile Asp Asp Gln
                375                 380                 385

gag tac aat ttc caa cag ttt atc tac aac aac tct ata tta ttg gaa        1258
Glu Tyr Asn Phe Gln Gln Phe Ile Tyr Asn Asn Ser Ile Leu Leu Glu
            390                 395                 400

cat ggc ctt acc cag ttt gtg gaa tca ttc agc agg caa att gct ggc        1306
His Gly Leu Thr Gln Phe Val Glu Ser Phe Ser Arg Gln Ile Ala Gly
        405                 410                 415

agg gtt gcc ggt ggc agg aat gtt cca gct gca gta caa caa gta gca        1354
Arg Val Ala Gly Gly Arg Asn Val Pro Ala Ala Val Gln Gln Val Ala
    420                 425                 430

aaa gct tcg att gac cag agc aga cag atg aaa tac cag tct ctt aat        1402
Lys Ala Ser Ile Asp Gln Ser Arg Gln Met Lys Tyr Gln Ser Leu Asn
435                 440                 445                 450

gag tat cgc aaa cgc ttt agg ctg aag ccc tat aca tca ttc gaa gaa        1450
Glu Tyr Arg Lys Arg Phe Arg Leu Lys Pro Tyr Thr Ser Phe Glu Glu
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ctt aca gga gag aag gaa atg gct gcg ggg ttg gag gcc ctt tat ggt      1498
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gat att gat gcc atg gag ctg tat cct gcc ctc ttg gta gaa aag cct      1546
Asp Ile Asp Ala Met Glu Leu Tyr Pro Ala Leu Leu Val Glu Lys Pro
        485                 490                 495

cgt cca gat gcc atc ttt ggt gag acc atg gta gaa atg gga gca cca      1594
Arg Pro Asp Ala Ile Phe Gly Glu Thr Met Val Glu Met Gly Ala Pro
    500                 505                 510

ttc tcc ttg aaa gga ctt atg ggt aat ccc atc tgt tca cct gac tac      1642
Phe Ser Leu Lys Gly Leu Met Gly Asn Pro Ile Cys Ser Pro Asp Tyr
515                 520                 525                 530

tgg aag cct agc acc ttt ggt gga gaa gta ggc ttt aaa atc atc aac      1690
Trp Lys Pro Ser Thr Phe Gly Gly Glu Val Gly Phe Lys Ile Ile Asn
                535                 540                 545

act gcc tca atc cag tct ctc atc tgc aat aac gtg aag ggc tgt cca      1738
Thr Ala Ser Ile Gln Ser Leu Ile Cys Asn Asn Val Lys Gly Cys Pro
            550                 555                 560

ttc act gca ttc tct gtt caa gac gga caa ctc acc aaa aca gtc acc      1786
Phe Thr Ala Phe Ser Val Gln Asp Gly Gln Leu Thr Lys Thr Val Thr
        565                 570                 575

att aat gca agc tct tcg cac tcc ggt cta gat gac atc aat ccc aca      1834
Ile Asn Ala Ser Ser Ser His Ser Gly Leu Asp Asp Ile Asn Pro Thr
    580                 585                 590

gtc cta ctg aaa gaa cgg tca act gaa cta tagaagcctg ttaatcctat        1884
Val Leu Leu Lys Glu Arg Ser Thr Glu Leu
595                 600

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tcattttttt ttttttgca ttatgtgaga atcagtatat cttctttgag attaactctg   2844

aattattatg taaacactaa gagaaattat ttgagatctg tgagtaaatt ttcaggaacc   2904

caactctggt atattgaaat atggcaagtt ggaattgaaa tatagatttc cctatatacc   2964

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            20                  25                  30


Met Ser Thr Gly Phe Asp Gln Tyr Lys Cys Asp Cys Thr Arg Thr Gly
        35                  40                  45


Phe Tyr Gly Glu Asn Cys Ser Thr Pro Glu Phe Leu Thr Arg Ile Lys
    50                  55                  60


Leu Tyr Leu Lys Pro Thr Pro Asn Thr Val His Tyr Ile Leu Thr His
65                  70                  75                  80
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Phe Lys Gly Val Trp Asn Ile Val Asn Asn Ile Pro Phe Leu Arg Asn
                85                  90                  95

Thr Ile Met Lys Tyr Val Leu Thr Ser Arg Ser His Leu Ile Glu Ser
            100                 105                 110

Pro Pro Thr Tyr Asn Val Asn Tyr Gly Tyr Lys Ser Trp Glu Ala Phe
        115                 120                 125

Ser Asn Leu Ser Tyr Tyr Thr Arg Ala Leu Pro Pro Val Pro Asp Asp
    130                 135                 140

Cys Pro Thr Pro Met Gly Val Lys Gly Lys Lys Glu Leu Pro Asp Ser
145                 150                 155                 160

Lys Glu Ile Val Glu Lys Phe Leu Leu Arg Arg Lys Phe Ile Pro Asp
                165                 170                 175

Pro Gln Gly Thr Asn Met Met Phe Ala Phe Phe Ala Gln His Phe Thr
            180                 185                 190

His Gln Phe Phe Lys Thr Asp His Lys Arg Gly Pro Ala Phe Thr Lys
        195                 200                 205

Gly Leu Gly His Gly Val Asp Leu Asn His Val Tyr Gly Glu Thr Leu
    210                 215                 220

Asp Arg Gln His Lys Leu Arg Leu Phe Lys Asp Gly Lys Met Lys Tyr
225                 230                 235                 240

Gln Val Ile Asp Gly Glu Val Tyr Pro Pro Thr Val Lys Asp Thr Gln
                245                 250                 255

Val Glu Met Ile Tyr Pro Pro His Val Pro Glu His Leu Gln Phe Ala
            260                 265                 270

Val Gly Gln Glu Val Phe Gly Leu Val Pro Gly Leu Met Met Tyr Ala
        275                 280                 285

Thr Ile Trp Leu Arg Glu His Asn Arg Val Cys Asp Val Leu Lys Gln
    290                 295                 300

Glu His Pro Glu Trp Asp Asp Glu Arg Leu Phe Gln Thr Ser Arg Leu
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Ile Leu Ile Gly Glu Thr Ile Lys Ile Val Ile Glu Asp Tyr Val Gln
                325                 330                 335

His Leu Ser Gly Tyr His Phe Lys Leu Lys Phe Asp Pro Glu Leu Leu
            340                 345                 350

Phe Asn Gln Gln Phe Gln Tyr Gln Asn Arg Ile Ala Ala Glu Phe Asn
        355                 360                 365

Thr Leu Tyr His Trp His Pro Leu Leu Pro Asp Thr Leu Gln Ile Asp
    370                 375                 380

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385                 390                 395                 400

Leu Glu His Gly Leu Thr Gln Phe Val Glu Ser Phe Ser Arg Gln Ile
                405                 410                 415

Ala Gly Arg Val Ala Gly Gly Arg Asn Val Pro Ala Ala Val Gln Gln
            420                 425                 430

Val Ala Lys Ala Ser Ile Asp Gln Ser Arg Gln Met Lys Tyr Gln Ser
        435                 440                 445

Leu Asn Glu Tyr Arg Lys Arg Phe Arg Leu Lys Pro Tyr Thr Ser Phe
    450                 455                 460

Glu Glu Leu Thr Gly Glu Lys Glu Met Ala Ala Gly Leu Glu Ala Leu
465                 470                 475                 480

Tyr Gly Asp Ile Asp Ala Met Glu Leu Tyr Pro Ala Leu Leu Val Glu
                485                 490                 495

Lys Pro Arg Pro Asp Ala Ile Phe Gly Glu Thr Met Val Glu Met Gly
            500                 505                 510

Ala Pro Phe Ser Leu Lys Gly Leu Met Gly Asn Pro Ile Cys Ser Pro
        515                 520                 525

Asp Tyr Trp Lys Pro Ser Thr Phe Gly Gly Glu Val Gly Phe Lys Ile
    530                 535                 540
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Ile Asn Thr Ala Ser Ile Gln Ser Leu Ile Cys Asn Asn Val Lys Gly
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Cys Pro Phe Thr Ala Phe Ser Val Gln Asp Gly Gln Leu Thr Lys Thr
                565                 570                 575


Val Thr Ile Asn Ala Ser Ser Ser His Ser Gly Leu Asp Asp Ile Asn
            580                 585                 590


Pro Thr Val Leu Leu Lys Glu Arg Ser Thr Glu Leu
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tatttggagt gggtttcagg tataatttta ttcttgtcag aaattccggt gttgagcagt 3300

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tacaaatacc ttggttttga catgggtggg aacagcaagg atttgctgcg cggacgaccg 3420

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<210> 7
<211> 1812
<212> DNA
<213> Canis familiaris

<400> 7
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aagtgtgact gtacccgaac aggattctac ggcgaaaact gctcaacacc ggaatttctg 180

acaagaataa aattatacct gaaacccact ccaaatacag tacactacat acttacccac 240

ttcaagggag tctggaacat tgtcaataac atccccttcc tgcgaaatac aattatgaaa 300

tatgtgttga catcccggtc acatttgatt gagagtccac caacttataa tgtgaactac 360

ggctataaaa gctgggaagc cttttctaac ctctcctatt ataccagagc tcttccccct 420

gtacctgatg actgtccaac acccatgggt gtgaaaggca agaaagagct tcctgattca 480

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aatatgatgt ttgcattctt tgcccagcac tttacccatc aatttttcaa gacagatcat 600

aagcgaggac cagctttcac caaaggattg ggccatgggg tggacttaaa tcatgtttat 660

ggggaaactt tggatagaca acataaactg cgccttttca aggatggaaa aatgaaatat 720

caggtaattg atggagaggt gtatcctcct accgtcaaag atactcaggt cgagatgatc 780

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gatgccatct ttggtgagac catggtagaa atgggagcac cattctcctt gaaaggactt 1560

atgggtaatc ccatctgttc acctgactac tggaagccta gcacctttgg tggagaagta 1620

ggctttaaaa tcatcaacac tgcctcaatc cagtctctca tctgcaataa cgtgaagggc 1680

tgtccattca ctgcattctc tgttcaagac ggacaactca ccaaaacagt caccattaat 1740

gcaagctctt cgcactccgg tctagatgac atcaatccca cagtcctact gaaagaacgg 1800

tcaactgaac ta 1812

<210> 8
<211> 1812
<212> DNA
<213> Canis familiaris

<400> 8
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agtgaatgga cagcccttca cgttattgca gatgagagac tggattgagg cagtgttgat 180

gattttaaag cctacttctc caccaaaggt gctaggcttc cagtagtcag gtgaacagat 240

gggattaccc ataagtcctt tcaaggagaa tggtgctccc atttctacca tggtctcacc 300

aaagatggca tctggacgag gcttttctac caagagggca ggatacagct ccatggcatc 360

aatatcacca taaagggcct ccaaccccgc agccatttcc ttctctcctg taagttcttc 420

gaatgatgta tagggcttca gcctaaagcg tttgcgatac tcattaagag actggtattt 480

catctgtctg ctctggtcaa tcgaagcttt tgctacttgt tgtactgcag ctggaacatt 540

cctgccaccg gcaaccctgc cagcaatttg cctgctgaat gattccacaa actgggtaag 600 gccatgttcc aataatatag agttgttgta gataaactgt tggaaattgt actcctggtc 660

atctatttgc aaggtgtcag gcaggagggg atgccagtgg tagagtgtgt taaactcagc 720

agcaatgcgg ttttggtact ggaattgttg gttgaaaagc agctctgggt caaacttcag 780

cttgaagtga tagccactca agtgttgtac atagtcttca atcacaatct taatggtttc 840

tcctataagt attagcctgc tcgtctggaa taaccgctca tcatcccatt ctgggtgctc 900

ctgtttaagc acatcacaca ctctgttatg ctcccgcagc caaatggtgg catacatcat 960

cagaccaggc accagaccaa agacctcctg gcccacagca aactgcaggt gttcaggaac 1020

atgaggtggg tagatcatct cgacctgagt atctttgacg gtaggaggat acacctctcc 1080

atcaattacc tgatatttca tttttccatc cttgaaaagg cgcagtttat gttgtctatc 1140

caaagtttcc ccataaacat gatttaagtc caccccatgg cccaatcctt tggtgaaagc 1200

tggtcctcgc ttatgatctg tcttgaaaaa ttgatgggta aagtgctggg caaagaatgc 1260

aaacatcata ttggtgcctt ggggatcagg aatgaacttt cttcgcagaa gaaacttttc 1320

cacaatctct tttgaatcag gaagctcttt cttgcctttc acacccatgg gtgttggaca 1380

gtcatcaggt acagggggaa gagctctggt ataataggag aggttagaaa aggcttccca 1440

gcttttatag ccgtagttca cattataagt tggtggactc tcaatcaaat gtgaccggga 1500

tgtcaacaca tatttcataa ttgtatttcg caggaagggg atgttattga caatgttcca 1560

gactcccttg aagtgggtaa gtatgtagtg tactgtattt ggagtgggtt tcaggtataa 1620

ttttattctt gtcagaaatt ccggtgttga gcagttttcg ccgtagaatc ctgttcgggt 1680

acagtcacac ttatactggt caaatcctgt gctcatacaa ataccttggt tttgacatgg 1740

gtgggaacag caaggatttg ctgcgcggac gaccgccagg gcggcgcaga gcaccagggc 1800

gcgggccagc at 1812

<210> 9
<211> 275
<212> DNA
<213> Canis familiaris

<220>
<221> CDS
<222> (1)..(273)
<223>

<400> 9

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ttt gca caa cac ttc acc cac cag ttc ttc aaa act tct ggc aag atg        48
Phe Ala Gln His Phe Thr His Gln Phe Phe Lys Thr Ser Gly Lys Met
1               5                   10                  15
```

```
ggt cct ggc ttc acc aag gcc ttg ggc cat ggg gta gat ctt ggt cac          96
Gly Pro Gly Phe Thr Lys Ala Leu Gly His Gly Val Asp Leu Gly His
            20                  25                  30

att tat ggg gac aat ctg gac cgt cag tat cag ctg cgg ctc ttt aag         144
Ile Tyr Gly Asp Asn Leu Asp Arg Gln Tyr Gln Leu Arg Leu Phe Lys
        35                  40                  45

gat ggg aaa ctc aag tat cag gtt ctg gat gga gag atg tac ccg tca         192
Asp Gly Lys Leu Lys Tyr Gln Val Leu Asp Gly Glu Met Tyr Pro Ser
    50                  55                  60

tct gtg gag gag gcg cct gtg ttg atg cac tac cca cgg ggc att ctg         240
Ser Val Glu Glu Ala Pro Val Leu Met His Tyr Pro Arg Gly Ile Leu
65                  70                  75                  80

ccc cag agt cag atg gct gtg ggc cag gag gtg tt                          275
Pro Gln Ser Gln Met Ala Val Gly Gln Glu Val
                85                  90


<210>  10
<211>  91
<212>  PRT
<213>  Canis familiaris

<400>  10

Phe Ala Gln His Phe Thr His Gln Phe Phe Lys Thr Ser Gly Lys Met
1               5                   10                  15


Gly Pro Gly Phe Thr Lys Ala Leu Gly His Gly Val Asp Leu Gly His
            20                  25                  30


Ile Tyr Gly Asp Asn Leu Asp Arg Gln Tyr Gln Leu Arg Leu Phe Lys
        35                  40                  45


Asp Gly Lys Leu Lys Tyr Gln Val Leu Asp Gly Glu Met Tyr Pro Ser
    50                  55                  60


Ser Val Glu Glu Ala Pro Val Leu Met His Tyr Pro Arg Gly Ile Leu
65                  70                  75                  80


Pro Gln Ser Gln Met Ala Val Gly Gln Glu Val
                85                  90


<210>  11
<211>  275
<212>  DNA
<213>  Canis familiaris

<400>  11
aacacctcct ggcccacagc catctgactc tggggcagaa tgccccgtgg gtagtgcatc        60
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aacacaggcg cctcctccac agatgacggg tacatctctc catccagaac ctgatacttg    120

agtttcccat ccttaaagag ccgcagctga tactgacggt ccagattgtc cccataaatg    180

tgaccaagat ctaccccatg gcccaaggcc ttggtgaagc caggacccat cttgccagaa    240

gttttgaaga actggtgggt gaagtgttgt gcaaa                               275


<210>  12
<211>  2693
<212>  DNA
<213>  Canis familiaris

<220>
<221>  CDS
<222>  (31)..(1929)
<223>


<400>  12
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                                 Met Ser Arg Glu Phe Asp Pro Glu
                                 1               5

gcc ccc agg aac cct ctt cgc ctc ccg ggg gag cct cga atg cca ggc      102
Ala Pro Arg Asn Pro Leu Arg Leu Pro Gly Glu Pro Arg Met Pro Gly
    10                  15                  20

cca gcc ctc acc tct cgc tcc gca ggg ggg agt cgc ctg cac cgg tgg      150
Pro Ala Leu Thr Ser Arg Ser Ala Gly Gly Ser Arg Leu His Arg Trp
25                  30                  35                  40

ccg ctg ctc ctg ctg ctg ctg ctg ctg ctg ccg ccg ccc ccg gtc ctg      198
Pro Leu Leu Leu Leu Leu Leu Leu Leu Leu Pro Pro Pro Pro Val Leu
                45                  50                  55

ccc gcg gaa gcc cgg acc ccg gcg cct gtg aac ccg tgt tgt tac tac      246
Pro Ala Glu Ala Arg Thr Pro Ala Pro Val Asn Pro Cys Cys Tyr Tyr
            60                  65                  70

cca tgt cag cac caa ggg atc tgt gtc cgc ttc ggc ctt gac cgc tac      294
Pro Cys Gln His Gln Gly Ile Cys Val Arg Phe Gly Leu Asp Arg Tyr
        75                  80                  85

cag tgt gac tgc acc cgc acg ggc tat tct ggc ccc aac tgc acc atc      342
Gln Cys Asp Cys Thr Arg Thr Gly Tyr Ser Gly Pro Asn Cys Thr Ile
    90                  95                  100

ccc gag ctg tgg acc tgg ctc cgg aat tca ctg cgc ccc agt ccc tct      390
Pro Glu Leu Trp Thr Trp Leu Arg Asn Ser Leu Arg Pro Ser Pro Ser
105                 110                 115                 120

ttc ctc cac ttc ctg ctg acg cat ggg cgc tgg ttt tgg gaa ttc atc      438
Phe Leu His Phe Leu Leu Thr His Gly Arg Trp Phe Trp Glu Phe Ile
                125                 130                 135

aat gcc acc ttc atc cgt gac atg ctc atg cgt ctg gta ctc aca gcg      486
```

```
Asn Ala Thr Phe Ile Arg Asp Met Leu Met Arg Leu Val Leu Thr Ala
            140                 145                 150

cgt tcc aac ctt atc ccc agt cct ccc acc tac aac ata gcg cat gac      534
Arg Ser Asn Leu Ile Pro Ser Pro Pro Thr Tyr Asn Ile Ala His Asp
        155                 160                 165

tac atc agc tgg gag tcc ttc tcc aat gtg agc tat tac act cgt gtt      582
Tyr Ile Ser Trp Glu Ser Phe Ser Asn Val Ser Tyr Tyr Thr Arg Val
    170                 175                 180

ctg ccc tct gtg ccc caa gat tgc ccc acg ccc atg ggg acc aaa ggg      630
Leu Pro Ser Val Pro Gln Asp Cys Pro Thr Pro Met Gly Thr Lys Gly
185                 190                 195                 200

aag aag cag ttg cca gac gcc caa ctc ctg ggc cgt cgc ttc ctg ctc      678
Lys Lys Gln Leu Pro Asp Ala Gln Leu Leu Gly Arg Arg Phe Leu Leu
                205                 210                 215

agg agg aag ttc ata cct gac ccc caa ggc acc aac ctc atg ttc gcc      726
Arg Arg Lys Phe Ile Pro Asp Pro Gln Gly Thr Asn Leu Met Phe Ala
            220                 225                 230

ttc ttt gca caa cac ttc acc cat cag ttc ttc aaa act tct ggc aag      774
Phe Phe Ala Gln His Phe Thr His Gln Phe Phe Lys Thr Ser Gly Lys
        235                 240                 245

atg ggt cct ggc ttc acc aag gcc ttg ggc cat ggg gta gat ctt ggc      822
Met Gly Pro Gly Phe Thr Lys Ala Leu Gly His Gly Val Asp Leu Gly
    250                 255                 260

cac att tat ggg gac aat ctg gac cgt cag tat cag ctg cgg ctc ttt      870
His Ile Tyr Gly Asp Asn Leu Asp Arg Gln Tyr Gln Leu Arg Leu Phe
265                 270                 275                 280

aag gat ggg aaa ctc aag tat cag gtt ctg gat gga gag atg tac ccg      918
Lys Asp Gly Lys Leu Lys Tyr Gln Val Leu Asp Gly Glu Met Tyr Pro
                285                 290                 295

cca tct gtg gag gag gcg cct gtg ttg atg cac tac cca cgg ggc att      966
Pro Ser Val Glu Glu Ala Pro Val Leu Met His Tyr Pro Arg Gly Ile
            300                 305                 310

ctg ccc cag agt cag atg gcc gtg ggc cag gag gtg ttt ggg ctg ctt     1014
Leu Pro Gln Ser Gln Met Ala Val Gly Gln Glu Val Phe Gly Leu Leu
        315                 320                 325

cct ggg ctc atg ctc tat gcc acg ctc tgg ctg cgt gag cac aat cgt     1062
Pro Gly Leu Met Leu Tyr Ala Thr Leu Trp Leu Arg Glu His Asn Arg
    330                 335                 340

gtg tgt gac ctg ctg aag gct gag cac ccc act tgg ggt gat gag caa     1110
Val Cys Asp Leu Leu Lys Ala Glu His Pro Thr Trp Gly Asp Glu Gln
345                 350                 355                 360

ctc ttc cag acg gcc cga ctc atc ctc att ggg gag acc atc aag att     1158
Leu Phe Gln Thr Ala Arg Leu Ile Leu Ile Gly Glu Thr Ile Lys Ile
                365                 370                 375
```

```
gtg att gag gag tat gtg cag cag ctg agt ggc tac ttc ttg cag ctg        1206
Val Ile Glu Glu Tyr Val Gln Gln Leu Ser Gly Tyr Phe Leu Gln Leu
            380                 385                 390

aag ttc gac ccg gag ctg ctg ttt agc gcc cag ttc cag tac cgc aac        1254
Lys Phe Asp Pro Glu Leu Leu Phe Ser Ala Gln Phe Gln Tyr Arg Asn
        395                 400                 405

cgc atc gcc atg gag ttc aac cag ctg tac cac tgg cac ccg ctc atg        1302
Arg Ile Ala Met Glu Phe Asn Gln Leu Tyr His Trp His Pro Leu Met
    410                 415                 420

cca gac tcc ttc tgg gtg ggt tcc cag gag tac agc tat gag cag ttc        1350
Pro Asp Ser Phe Trp Val Gly Ser Gln Glu Tyr Ser Tyr Glu Gln Phe
425                 430                 435                 440

ctg ttc aac acc tcc atg ctg acg cac tac ggg atc gag gcc ctg gtg        1398
Leu Phe Asn Thr Ser Met Leu Thr His Tyr Gly Ile Glu Ala Leu Val
                445                 450                 455

gat gcc ttc tct cgc cag agc gcc ggc cgg att ggt gga ggt aga aac        1446
Asp Ala Phe Ser Arg Gln Ser Ala Gly Arg Ile Gly Gly Gly Arg Asn
            460                 465                 470

ata gac cac cat gtc ctg cac gtg gct gtg gaa acc atc aag gaa tcc        1494
Ile Asp His His Val Leu His Val Ala Val Glu Thr Ile Lys Glu Ser
        475                 480                 485

cgc gag ttg cgg ctg cag ccc ttc aat gag tac cgc aag agg ttt ggc        1542
Arg Glu Leu Arg Leu Gln Pro Phe Asn Glu Tyr Arg Lys Arg Phe Gly
    490                 495                 500

atg agg ccc tac atg tcc ttc cag gaa ctc aca ggg gag aag gag atg        1590
Met Arg Pro Tyr Met Ser Phe Gln Glu Leu Thr Gly Glu Lys Glu Met
505                 510                 515                 520

gca gcc gag ttg gag gag ctg tat gga gac att gat gcc ttg gaa ttc        1638
Ala Ala Glu Leu Glu Glu Leu Tyr Gly Asp Ile Asp Ala Leu Glu Phe
                525                 530                 535

tac ccg ggg ctt ctt ctg gag aag tgc cat cca aac tcc atc ttt gga        1686
Tyr Pro Gly Leu Leu Leu Glu Lys Cys His Pro Asn Ser Ile Phe Gly
            540                 545                 550

gag agt atg ata gaa att ggg gct ccc ttc tcc ctt aag ggc ctc cta        1734
Glu Ser Met Ile Glu Ile Gly Ala Pro Phe Ser Leu Lys Gly Leu Leu
        555                 560                 565

ggg aat ccc atc tgt tct cca gag tac tgg aag cca agc aca ttc ggt        1782
Gly Asn Pro Ile Cys Ser Pro Glu Tyr Trp Lys Pro Ser Thr Phe Gly
    570                 575                 580

ggt gag atg ggc ttc aat atg gtc aag aca gcc aca ctg aag aag ctg        1830
Gly Glu Met Gly Phe Asn Met Val Lys Thr Ala Thr Leu Lys Lys Leu
585                 590                 595                 600

gtc tgc ctt aac acc aag act tgt ccc tat gtt tcc ttc cgt gtg cct        1878
Val Cys Leu Asn Thr Lys Thr Cys Pro Tyr Val Ser Phe Arg Val Pro
                605                 610                 615
```

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gac ccc cac cag gat ggc ggg cct ggt gtg gag cgg ccg tcc aca gag      1926
Asp Pro His Gln Asp Gly Gly Pro Gly Val Glu Arg Pro Ser Thr Glu
            620                 625                 630

ctc tgagggggca gagcagcagc attctggagg gtggacttgt catcccagaa          1979
Leu


tgctgaggct ggggttaata atcccaaatg ttgggtcttt ggtttgcctc aagaatatca   2039

aggtcaacat ttagaacttt gtgtctctca cccattatct ggaatatcat ggtcttgttt   2099

gttattctag aatgctgaat tcctggttga ccatctagaa tggatggagt gatgcttctt   2159

tggcaagcca gaacactggt tcctggccga caacctagaa tgtcagactt ctggttgact   2219

taagacgtag gcattctcta atgtgaagct cctgacagaa tcatctagaa agataggggа   2279

ttcttatttt gcattctaga attctgggca gccctccagc atgttgattt ttttcactgg   2339

cagttcagaa tgttgtgctc ttgattgctg atccaaaata gtggctggta tgccagatca   2399

gtcttgctct gaatgcctag aatggtaatt tgattcattt tcctgttcag tgagataccc   2459

ccaaagcagg agaatctaca gcctaaccag agtgcattgc ctgcctctgt gcctgcccca   2519

aggacttagg gggcagagtg ttcttcctgg gatgctgact cagaccctgg tccaaggaga   2579

tagaacaggt gggctttttc caggtcattg gttggaggcc accagagctc tgttgccatc   2639

tttgtcttga ctcatgacag ctgtttctca tgaaactaat aaaatttttt ttcc         2693


<210>  13
<211>  633
<212>  PRT
<213>  Canis familiaris

<400>  13

Met Ser Arg Glu Phe Asp Pro Glu Ala Pro Arg Asn Pro Leu Arg Leu
1               5                   10                  15


Pro Gly Glu Pro Arg Met Pro Gly Pro Ala Leu Thr Ser Arg Ser Ala
            20                  25                  30


Gly Gly Ser Arg Leu His Arg Trp Pro Leu Leu Leu Leu Leu Leu Leu
        35                  40                  45


Leu Leu Pro Pro Pro Pro Val Leu Pro Ala Glu Ala Arg Thr Pro Ala
    50                  55                  60


Pro Val Asn Pro Cys Cys Tyr Tyr Pro Cys Gln His Gln Gly Ile Cys
65                  70                  75                  80
```

```
Val Arg Phe Gly Leu Asp Arg Tyr Gln Cys Asp Cys Thr Arg Thr Gly
                85                  90                  95

Tyr Ser Gly Pro Asn Cys Thr Ile Pro Glu Leu Trp Thr Trp Leu Arg
            100                 105                 110

Asn Ser Leu Arg Pro Ser Pro Ser Phe Leu His Phe Leu Leu Thr His
        115                 120                 125

Gly Arg Trp Phe Trp Glu Phe Ile Asn Ala Thr Phe Ile Arg Asp Met
    130                 135                 140

Leu Met Arg Leu Val Leu Thr Ala Arg Ser Asn Leu Ile Pro Ser Pro
145                 150                 155                 160

Pro Thr Tyr Asn Ile Ala His Asp Tyr Ile Ser Trp Glu Ser Phe Ser
                165                 170                 175

Asn Val Ser Tyr Tyr Thr Arg Val Leu Pro Ser Val Pro Gln Asp Cys
            180                 185                 190

Pro Thr Pro Met Gly Thr Lys Gly Lys Lys Gln Leu Pro Asp Ala Gln
        195                 200                 205

Leu Leu Gly Arg Arg Phe Leu Leu Arg Arg Lys Phe Ile Pro Asp Pro
    210                 215                 220

Gln Gly Thr Asn Leu Met Phe Ala Phe Phe Ala Gln His Phe Thr His
225                 230                 235                 240

Gln Phe Phe Lys Thr Ser Gly Lys Met Gly Pro Gly Phe Thr Lys Ala
                245                 250                 255

Leu Gly His Gly Val Asp Leu Gly His Ile Tyr Gly Asp Asn Leu Asp
            260                 265                 270

Arg Gln Tyr Gln Leu Arg Leu Phe Lys Asp Gly Lys Leu Lys Tyr Gln
        275                 280                 285

Val Leu Asp Gly Glu Met Tyr Pro Pro Ser Val Glu Glu Ala Pro Val
    290                 295                 300

Leu Met His Tyr Pro Arg Gly Ile Leu Pro Gln Ser Gln Met Ala Val
```

```
305                 310                 315                 320


Gly Gln Glu Val Phe Gly Leu Leu Pro Gly Leu Met Leu Tyr Ala Thr
                325                 330                 335


Leu Trp Leu Arg Glu His Asn Arg Val Cys Asp Leu Leu Lys Ala Glu
            340                 345                 350


His Pro Thr Trp Gly Asp Glu Gln Leu Phe Gln Thr Ala Arg Leu Ile
        355                 360                 365


Leu Ile Gly Glu Thr Ile Lys Ile Val Ile Glu Glu Tyr Val Gln Gln
    370                 375                 380


Leu Ser Gly Tyr Phe Leu Gln Leu Lys Phe Asp Pro Glu Leu Leu Phe
385                 390                 395                 400


Ser Ala Gln Phe Gln Tyr Arg Asn Arg Ile Ala Met Glu Phe Asn Gln
                405                 410                 415


Leu Tyr His Trp His Pro Leu Met Pro Asp Ser Phe Trp Val Gly Ser
            420                 425                 430


Gln Glu Tyr Ser Tyr Glu Gln Phe Leu Phe Asn Thr Ser Met Leu Thr
        435                 440                 445


His Tyr Gly Ile Glu Ala Leu Val Asp Ala Phe Ser Arg Gln Ser Ala
    450                 455                 460


Gly Arg Ile Gly Gly Gly Arg Asn Ile Asp His His Val Leu His Val
465                 470                 475                 480


Ala Val Glu Thr Ile Lys Glu Ser Arg Glu Leu Arg Leu Gln Pro Phe
                485                 490                 495


Asn Glu Tyr Arg Lys Arg Phe Gly Met Arg Pro Tyr Met Ser Phe Gln
            500                 505                 510


Glu Leu Thr Gly Glu Lys Glu Met Ala Ala Glu Leu Glu Glu Leu Tyr
        515                 520                 525


Gly Asp Ile Asp Ala Leu Glu Phe Tyr Pro Gly Leu Leu Leu Glu Lys
    530                 535                 540
```

```
Cys His Pro Asn Ser Ile Phe Gly Glu Ser Met Ile Glu Ile Gly Ala
545                 550                 555                 560


Pro Phe Ser Leu Lys Gly Leu Leu Gly Asn Pro Ile Cys Ser Pro Glu
                565                 570                 575


Tyr Trp Lys Pro Ser Thr Phe Gly Gly Glu Met Gly Phe Asn Met Val
            580                 585                 590


Lys Thr Ala Thr Leu Lys Lys Leu Val Cys Leu Asn Thr Lys Thr Cys
        595                 600                 605


Pro Tyr Val Ser Phe Arg Val Pro Asp Pro His Gln Asp Gly Gly Pro
    610                 615                 620


Gly Val Glu Arg Pro Ser Thr Glu Leu
625                 630


<210>  14
<211>  2693
<212>  DNA
<213>  Canis familiaris

<400>  14
ggaaaaaaaa ttttattagt ttcatgagaa acagctgtca tgagtcaaga caaagatggc      60

aacagagctc tggtggcctc caaccaatga cctggaaaaa gcccacctgt tctatctcct     120

tggaccaggg tctgagtcag catcccagga agaacactct gccccctaag tccttggggc     180

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<211> 1899
<212> DNA
<213> Canis familiaris

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ccgctgctcc tgctgctgct gctgctgctg ccgccgcccc cggtcctgcc cgcggaagcc 180

cggaccccgg cgcctgtgaa cccgtgttgt tactacccat gtcagcacca agggatctgt 240

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<220>
<223>  Synthetic Primer

<220>
<221>  misc_feature
<222>  (9)..(9)
<223>  n = unknown at position 9


<400>  17
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<210>  18
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<220>
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<220>
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<210>  19
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<220>
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<220>
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<220>
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<223>  n = unknown at position 15


<400>  19
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<210>  20
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<212>  DNA
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<220>
<223>  Synthetic Primer

<220>
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<220>
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<212>  DNA
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<220>
<223>  Synthetic Primer
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<220>
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<400>  22
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<210>  23
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<220>
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<400>  23
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<210>  24
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<212>  DNA
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<220>
<223>  Synthetic Primer

<400>  24
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<210>  25
<211>  24
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<220>
<223>  Synthetic Primer

<400>  25
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